

**Four Star Oil & Gas Company**  
Hatter's Pond Gas Production, Treating and Processing Facility  
Facility No. 503-4004  
Mobile County, Alabama

**STATEMENT OF BASIS**

The proposed Title V Major Source Operating Permit Significant Modification is issued under the provisions of ADEM Admin. Code R. 335-3-16. The above named applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans, and other documents attached hereto or on file with the Air Division of Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit.

Air Permit Number 503-4004-X017 will be incorporated into this permit modification. The air permit will include the addition of a 600 HP Compressor Engine (600W) and an increase in the volatile organic compound (VOC) emissions limits for the 1,626 IR-A and 1,626 IR-B Combo Compressor Engines.

**Project Description**

On October 1, 2008, Four Star submitted an application to modify their Major Source Operating Permit for its Hatter's Pond Gas Treating and Processing Facility (Hatter's Pond), Facility No. 504-4004. The proposed permit modification addresses the following:

- Facility's applicability to 40 CFR 63 Subpart HH, "*National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities*" for Area Sources
- Facility's applicability to New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous pollutant (NESHAP) requirements for the plant flare
- Increasing volatile organic compound (VOC) emissions from the 1,626 IR-A and 1,626 IR-B Combo Compressor Engines
- Removing the 2600IR-B West Injection Compressor Engine from the permit

On January 19, 2009, the facility submitted an air permit application for the installation of a 600 HP four stroke rich burn natural gas compressor engine to the replace the 2600IR-B West Injection Compressor Engine. The 600 HP compressor engine will be permitted in Air Permit No. 503-4004-X017 as emission source 600W.

The following sections of the permit will be revised as a result of the modifications:

- Provisos for Facility-wide VHAP Emissions to include applicability to 40 CFR 63 Subpart HH
- Provisos for the Facility Flares applicability to 40 CFR 63 Subpart HH and 40 CFR 60 Subpart KKK
- Opacity Monitoring found in *Appendix G* for the Facility Flares to include applicability to 40 CFR 63 Subpart HH
- Provisos for the Facility Engines pertaining to the 2600IR-B Injection Compressor Engine and the VOC emission limits for the 1,626 IR-A and 1,626 IR-B Combo

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Compressor Engines. The 600W will be added to the summary page and the provisos for the facility engines as necessary.

- Monitoring for the Facility Engines found in *Appendix B*

### **Facility History**

The Hatter's Pond facility is a gas production, treating, and processing facility which was constructed in two phases by previous owners, Getty Oil Company. The first phase of the facility was constructed in 1977 and the second phase was constructed from 1978-1981. The facility is a major source of criteria pollutants and took limits to be a synthetic minor source for HAPs emissions. The facility is also subject to the Prevention of Significant Deterioration (PSD) regulations and has undergone a PSD review for several of its engines and has taken anti-PSD limits on others to avoid having to undergo another review. The initial Title V application was issued on April 24, 2002 and the first renewal was issued on April 9, 2007.

### **Process Description**

Condensate laden sour gas is produced and gathered from nearby gas wells located in the Hatter's Pond gas field. Upon entering the facility, the sour field gas is separated from the liquids (i.e. condensate and water) in parallel trains of high (serving high-pressure wells), intermediate (serving intermediate-pressure wells), and low pressure (serving low-pressure wells) three-phase (i.e. gas, condensate, water) gas-liquid separators. Sour gas leaving the separators is then sent to low pressure (LP), intermediate pressure (IP) and high-pressure (HP) gas systems; these systems correspond to the well pressure.

The LP gas is compressed and routed to the IP gas system. The IP gas is sweetened in the IP amine contactor towers, while the HP gases are sweetened in the high pressure amine contactor. The intermediate pressure gases are compressed and combined with the high pressure gases prior to entering the glycol contactor. The combined sweetened, high-pressure wet gas then goes through a triethylene glycol (TEG) dehydration unit, which decreases the water content and/or the freezing temperature of the gas stream. The sweet, dried gas is then chilled.

The residue gas is sent to sales or gas lift compressor(s) while the natural gas liquids go to the fractionation unit, where the liquid stream is separated into propane, butane and a pentane mix. The sweet gas leaving the de-ethanizer is sent to compression and then is either sent to a natural gas pipeline for sales or used for gas lifting the wells. The gases exiting the condensate stabilizer go to the IP gas system for sweetening and compression. In the rich amine flash tank, gases are sweetened and are sent to the plant fuel system.

The impure amine leaving the amine contacting towers is sent to the amine regeneration tower for purification. Gas driven off of the rich amine in the regeneration process (i.e. acid gas) is sent to a thermal oxidizer for combustion.

The condensate exiting the high, intermediate and low-pressure separator passes through a stabilizer to lower the vapor pressure of the condensate stream. The

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condensate is then sent to storage while awaiting pipeline sales. Tank vapors are recompressed with a VRU and are utilized as plant fuel.

Water leaving the inlet three phase separators and the condensate separators are sent to the gas/condensate/water separation system where any gas or condensate that may have remained in the water is separated from the water. All gases are vented to a flare for burning. The condensate is sent to condensate storage. The water is sent to gas blanketed storage tanks prior to being disposed of.

Heat is provided by two (2) 48 MMBtu/hour process heaters.

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**Tri-Ethylene Glycol Dehydrator Emissions**

*Applicability to 40 CFR 63 Subpart HH for Area Source*

The tri-ethylene glycol dehydrator is used to remove water from the natural gas stream. The following requirements are applicable to this unit:

**Applicability Requirement:**

- The facility is subject to the applicable requirements of 40 CFR 63 Subpart HH, "*National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities*" (40 CFR § 63.760 Subpart HH) for an Area Source

To be applicable to the requirements of this subpart, the facility is required to meet the following criteria:

- Be a major source or area source of HAPs, AND
- Be equipped with an affected source, AND
- Process, upgrade, or store hydrocarbon liquids prior to the point of custody transfer, OR
- Process, upgrade, or store natural gas prior to the point at which natural gas enters the natural gas transmission and storage source category or is delivered to a final end user

The facility is classified as an area source of HAPs emissions since it does not meet the definition of a major source of HAPs. A major source of HAPs produces ten (10) tons per year (TPY) of a single HAP or twenty-five (25) TPY of a combination of HAPs. The facility processes, upgrades, and stores both natural gas and hydrocarbon liquids as required by this subpart. The facility is also equipped with an affected area source. The definition of an affected area source under 40 CFR Subpart HH requires the facility be equipped with a tri-ethylene glycol (TEG) dehydrator. Hatter's Pond is equipped with a TEG. The facility meets all of the above criteria which make it applicable to the requirements of this subpart.

The affected area source is located in an Urban-1 county, was constructed or reconstructed before February 6, 1998, and is located within any UA plus offset and UC boundary as defined in § 63.761 Subpart HH. Therefore, it is required to achieve compliance with the requirements of this subpart by January 4, 2010.

- The Tri-ethylene Glycol Dehydrator (TEG) located at this facility is subject to the applicable requirements of ADEM Admin. Code R. 335-3-16-.03, *Major Source Operating Permits*. The facility is a major source of sulfur dioxide (SO<sub>2</sub>), nitrogen oxide (NO<sub>x</sub>), carbon monoxide (CO), and volatile organic compounds (VOC) emissions; however, they are a synthetic minor source for HAPs emissions.

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**Tri-Ethylene Glycol Dehydrator Emissions**

- The Tri-ethylene Glycol Dehydrator (TEG) located at this facility is exempt from the applicable requirements of 40 CFR 64, *Compliance Assurance Monitoring (CAM)* for benzene emissions (§ 64.2(b)). However, the facility is required to meet the requirements of 40 CFR 63 Subpart HH to comply with CAM.

**Emission Standards:**

- The actual average emissions of benzene from the TEG dehydration unit process vent to the atmosphere shall be maintain at less than 0.90 megagram per year (40 CFR § 63.764 (e)(1)(ii), Subpart HH).

If the facility can demonstrate that a) its actual annual average flow rate of natural gas to the glycol dehydration unit is less than 85,000 standard cubic meters per day (scm/day) or b) its average emission of benzene from the glycol dehydration unit process vent to the atmosphere is less than 0.90 mega-grams per year, then the facility would be exempt from the general standards found in 40 CFR § 63.764 (d)(1), Subpart HH (40 CFR § 63.764(e) Subpart HH).

**Compliance and Performance Test Methods and Procedures:**

- To demonstrate compliance with the emissions standard, benzene emissions must be determined, either uncontrolled or with federally enforceable control, using one of the methods found in 40 § 63.772 (b)(2) Subpart HH. Compliance is also demonstrated by maintaining records of their exemption determination (40 § 63.764 (e)(1) Subpart HH) and by routing vapors from the TEG dehydrator process vent to the flare (40 § 63.771 (d)(1)(iii) Subpart HH).

Using the computer model, GRI-GlyCalc, as specified in 40 CFR §63.772(b)(2)(i) Subpart HH, the facility was able to determine that the average benzene for the glycol dehydration unit process vent was less than 0.90 mega-grams per year (~1 tons per year). The emissions from the glycol dehydration unit were routed to the flare when this determination was made.

**Emission Monitoring:**

Monitoring is met by keeping records of the actual average benzene emissions from the TEG dehydrator.

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**Tri-Ethylene Glycol Dehydrator Emissions**

**Recordkeeping and Reporting Requirement:**

The facility would be required to maintain records of its exemption determination and records of the actual average benzene emissions per year using GRI-GlyCalc or other approved methods. To ensure that the facility is meeting the emissions standard, they will be required to submit a copy of the benzene emissions for the TEG dehydrator to the Department as part of the Title V emission estimates.

**Potential emissions:**

The results of the GRI-GlyCalc model from April 22, 2008 are given below.

<b>Emission Source</b>	<b>Benzene Emissions (TPY)</b>	
	Controlled	Uncontrolled
TEG Unit	0.465	23.2553

*Table 1-TEG Benzene Emissions*

Emissions from the TEG dehydrator process vent are routed to the flare for burning, therefore, the emissions are controlled.

**Compliance Assurance Monitoring (CAM) Applicability:**

To be subject to CAM, the TEG unit would have to meet the following criteria (40 CFR 64.3(a)):

- be subject to an emission limit or standard, and
- use a control device to achieve compliance with the emissions limit or standard, and
- have pre-controlled emissions greater than 100% of the amount, in tons per year (TPY), required for a source to be classified as a major source.

The TEG dehydration unit has benzene emission limits in place and it uses the flare as a control device to achieve compliance with the emission limits. The unit also has pre-controlled benzene emissions, greater than 10 tons per year (TPY) which would classify it as a major source of HAPs emissions, as shown in Table 1. Therefore, it would be subject to CAM regulations.

This unit is subject to the benzene emissions standards specified in 40 CFR 63 Subpart HH, *National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities*, a post November 15, 1990 standard. Per 40 CFR § 64.2(b), a source subject to an emission limitation or standard proposed after this date is exempt from the requirements of CAM for this pollutant. The monitoring required by the MACT is presumptively acceptable.

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**Tri-Ethylene Glycol Dehydrator Emissions**

The MACT requires that the process vent be connected to a control device or combination of control devices through a closed-vent system and that the outlet benzene emissions from the control device shall be reduced to a level less than 0.90 megagrams per year (40 §63.765 (b)(1)(ii) Subpart HH). The control device used to reduce HAP emissions in accordance with the standards shall be a flare (40 §63.771 (d)(1)(iii) Subpart HH). The flare monitoring requires that the owner or operator install, calibrate, operate, and maintain the flare with a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flare (40 §63.773 (d)(3)(i)(C) Subpart HH). The flare CAM plan is found in the flare subpart.

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**Facility Process Flares**

*Applicability to NSPS KKK and MACT HH*

The facility's main flare (FF) is used to burn vapors routed from the TEG dehydration unit, volatile organic compound (VOC) emissions from affected facilities, acid gas from the sweetening unit, and other produced gases. The facility's back up flare (BFF) is designed to operate in the event that the facility flare is temporarily out of service. Only the flare's applicability to the NSPS and MACT requirements are discussed here.

**Applicability Requirements:**

- The facility would be subject to the applicable requirements of 40 CFR §63.11(b) Subpart A, "General Provisions" and 40 CFR §60.18(b) Subpart A, "General Provisions".

Provided that the benzene emissions from the glycol dehydration unit process vent subject to 40 CFR 63 Subpart HH, "National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities" and the fugitive VOC emissions from affected facilities subject to 40 CFR 60 Subpart KKK, "Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants" are routed to the flare for burning, the facility flares are subject to the smokeless flare requirements under these subpart.

Currently, the permit shows that the flare was use to comply with 40 CFR 60 Subparts K<sub>a</sub> and K<sub>b</sub> for Volatile Organic Liquid Storage Vessels. However, stock tank vapors from the storage tanks are routed to a vapor recovery system to comply with these subparts K<sub>a</sub> and K<sub>b</sub>.

**Emission Standards**

- 40 CFR §60.18 (b) and 40 CFR §63.11(b) demonstrates the emissions standards for a flare used as a control device to comply with the requirements of a NSPS or MACT. Since the flare would be subject to both a NSPS and a MACT, the facility flare is required meet the following requirements:
  - Operate with no visible emissions, except for a five minute period during any consecutive two hour period (40 CFR §60.18(c)(1) Subpart A, 40 CFR §63.11(b)(4) Subpart A)
  - Operate with a flame present at all times (40 CFR §60.18(c)(2) Subpart A, 40 CFR §63.11(b)(3))
  - Be steam-assisted, air-assisted, or non-assisted (40 CFR §60.18(c)(6) Subpart A, 40 CFR §63.11(b)(2)).

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**Facility Process Flares**

**Compliance and Performance Test Methods and Procedures:**

- Compliance with the visible emission provisions for the facility flare shall be met by conducting visible emissions observations of the flare in accordance with Method 22 found in 40 CFR 60 Appendix A (40 CFR §60.18(f)(1) Subpart A, 40 CFR §63.11(b)(4) Subpart A).
- Compliance with the requirement to detect the presence of a flame at the flare tip shall be met by using a thermocouple or any other equivalent device (40 CFR §60.18(f)(2) Subpart A, 40 CFR §63.11(b)(5) Subpart A).
- Compliance with the operation and design specifications for the flare shall be met by adhering to the requirements specified in 40 CFR §60.18(c)(3) Subpart A and 40 CFR §63.11(b)(6) Subpart A.

**Emission Monitoring:**

- To demonstrate compliance with the emissions standard for a smokeless flare, the facility would be required to use Method 22 from Appendix A of 40 CFR 60. Monitoring for opacity would require the facility to perform daily visual emissions observations of the flare. Records of the time, date, and results of corrective actions taken for each occurrence of a deviation shall be maintained.
- To demonstrate that a flame or spark is present at the flare tip at all times, the flare tip has to be equipped with one of the following:
  - A continuous sparking flame igniter that is monitored by an amp meter or an equivalent device or visual observation
  - A continuously burning pilot light that is monitored with either a thermocouple or an equivalent device or by visual observation

**Recordkeeping and Reporting Requirement:**

Records of daily visual emissions observation and any deviations from the requirement to maintain the flare with no visible emissions, except as specified, and deviations for failure to maintain the presence of a flame or spark at the flare tip should be maintained by the facility. These deviations should be reported semi-annually to the Department in a Periodic Monitoring Report that meets the following reporting schedule:

<u>Reporting Period</u>	<u>Submittal Date</u>
<i>January 1<sup>st</sup> through June 31<sup>st</sup></i>	<i>July 31<sup>st</sup></i>
<i>July 1<sup>st</sup> through December 31<sup>st</sup></i>	<i>January 31<sup>st</sup></i>

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**Facility Process Flares**

**CAM Applicability:**

The facility flare has already been deemed CAM applicable for hydrogen sulfide (H<sub>2</sub>S) and is utilized to assure compliance for the H<sub>2</sub>S combustion requirements. The facility flare is also applicable to CAM for benzene (HAPs) emissions from the TEG unit. The monitoring plan for benzene emissions requires that the facility route the vapors from the process vent through a closed vent system to the flare. The flare is continuously monitored to indicate the presence of a flame or spark at the flare tip. The CAM plan for the flare currently in the permit for H<sub>2</sub>S emissions is sufficient for the benzene emissions since both plans would use the same parameter, the presence of a flame, to ensure that these gases are properly burned in the flare. The existing facility flare monitoring plan is found in the following pages.

### *Each Facility Flare*

Monitoring approach:	Periodic Monitoring	Compliance Assurance Monitoring (CAM)
<b>I. Indicator</b>	<b>H<sub>2</sub>S feed rate</b>	<b>Operate flare with a flame or spark present at all times when a process gas stream may be sent to it. [\$60.18(c)(2) &amp; §63.11(b)(3)]</b>
A. Measurement approach	<p>Inlet feed volume shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculations or estimated utilizing material balances, computer simulations, special testing, etc.</p> <p>Inlet feed analyzed monthly for its H<sub>2</sub>S content.</p> <p>Frequency may be modified upon receipt of Departmental approval.</p>	<p>The flare tip shall be equipped either with a continuous sparking flame igniter that is monitored by an amp meter or an equivalent device or visual observation</p> <p><i>OR</i></p> <p>with a continuously burning pilot light that is monitored with either a thermocouple or an equivalent device or by visual observation.</p>
<b>II. Indicator range</b>	<b>H<sub>2</sub>S feed rate &lt;= 500 Lbs/Hr</b>	<b>Presence of a flame or spark at flare tip</b>
	<p>A deviation is defined as anytime the average H<sub>2</sub>S feed rate is &gt; 500 Lbs/Hr.</p> <p>Two deviations within a semi- annual period triggers an immediate running of an air quality modeling study that utilizes the maximum inlet mass and flow rates that occurred during this period.</p> <p>The maximum feed rate may be modified upon receipt of Departmental approval.</p>	<p>A deviation is defined as when there was no spark or flame present at the flare tip when a process gas stream could be vented to it.</p> <p>A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.</p>
A QIP threshold	Not applicable	If more than 6 deviations occur during any semi-annual reporting period, a Quality Improvement Plan shall be developed and implemented.
<b>III. Performance criteria</b>		
A. Data representiveness	<p>Each volume monitor shall be located upstream of the flare and shall consist of a single device that monitors all streams or multiple devices that monitor individual or multiple streams.</p> <p>The sample point for obtaining the H<sub>2</sub>S content shall be located at or upstream of each volume monitor.</p>	<p>Each flame igniter or flame monitor shall be located at the flare tip and focused on the area where gas exits the flare tip.</p> <p>Visual observations shall be made from the location that provides the best view of the flare tip and/or flare pilot lights or flare igniter.</p>
B. Verification of operational status	Not applicable	Not applicable

### *Each Facility Flare*

Monitoring approach:	<i>Periodic Monitoring</i>	<i>Compliance Assurance Monitoring (CAM)</i>
C. QA/QC practices & criteria	Each volume monitor shall be maintained and calibrated in accordance with the manufacturer's specifications.	<p>Each flame igniter or flame monitor shall be maintained and calibrated in accordance with the manufacturer's specifications, other written procedures that provide adequate assurance that the device is properly maintained and calibrated accurately, or at least annually whichever is more frequent..</p> <p>Repairs and/or replacements shall be made immediately when non-functioning or damaged parts are found.</p> <p>Flame igniter arc length shall not exceed 10% of arc interval and shall have an arcing frequency of no greater than once every 3 seconds.</p>
D. Monitoring frequency	Inlet volume shall be measured continuously.	Pilot flame shall be monitored either continuously with a thermocouple or daily with visual inspections if operating staff is on site.
Data collection procedure	Inlet feed H <sub>2</sub> S content sample obtained and analyzed once each month.	Flame igniter - arcing frequency shall be monitored either continuously with an amp meter or daily with visual inspections if operating staff is on site.
	Calculate &/or record an inlet volume that is representative of the average daily volume entering the flare.	Record time, date and duration of each incident of when no spark or flame was present at the flare tip when a process gas stream could have been sent to it.
	Record daily hours of operation.	
	Record each H <sub>2</sub> S concentration analysis.	
	Calculate & record H <sub>2</sub> S feed.	Record time, date and results of each visual observation.
	Record time, date and results of each calibration.	Record time, date and results of each calibration.
	Record time, date and results of each inspection and corrective actions taken.	Record time, date and results of each inspection and corrective actions taken.
	Submit air quality modeling results to the Department within 60 days of the end of the semi-annual period.	
Averaging period	Monthly	Instantaneous

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**Facility Engines**

The facility requested that the 2600IR-B West Injection compressor engine, which was removed from service on November 7, 2008, be removed from the permit and that its allowable emissions be netted. Air Permit Number 503-4004-X017 is currently being proposed for a 600 HP (600W) natural gas fired, four stroke rich burn (4SRB), spark ignition compressor engine to replace the 2600IR-B compressor engine. If the facility is allowed to install this unit it will be incorporated in MSOP No.: 503-4004 while it is currently open for modification. The facility also requested that they be allowed to increase volatile organic compounds (VOC) emissions from their 1626IR-A and 1626IR-B Combo compressor engines. These units are also (4SRB) spark ignition stationary internal combustion engines (ICE).

**Applicability Requirement:**

- The 1626IR-A, 1626IR-B, and the 600W compressor engines would be subject to ADEM Admin. Code. r. 335-3-4-.01(1) *Control of Particulate Emissions*. This regulation requires that any source of particulate emissions shall not discharge more than one 6-minute average opacity greater than 20% in any 60-minute period and that at no time shall any source discharge a 6-minute average opacity of particulate emissions greater than 40%. Although the compressor engines would be subject to this regulation, no monitoring would be required since the fuel source for these units will be sweetened natural gas. PM emissions from the burning of natural gas should be negligible.
- ADEM Admin. Code R. 335-3-14-.04 "*Prevention of Significant Deterioration (PSD)*" would not be applicable to the 1626IR-A, 1626IR-B, or the 600W compressor engines. The 1626IR-A and 1626IR-B compressor engines have limits in place which allows them to synthetic minor sources when determining applicability to PSD. The results of the netting analysis conducted to install the proposed 600W compressor engine indicate that this unit would not be subject to PSD regulations. The unit would not be subject because a significant emissions increase or a significant net increase in emissions would not be expected. The facility is subject to PSD regulations since the facility wide VOC, NO<sub>x</sub> and CO emissions are expected to exceed 250 TPY.
- The 1626IR-A, 1626IR-B, and the 600W compressor engines are located at a facility that is subject to the requirements of ADEM Admin. Code R. 335-3-16-.03, "*Major Source Operating Permits*". The facility has been deemed a major source of criteria pollutants and a minor source for hazardous air pollutants (HAPs).
- 40 CFR 63 Subpart ZZZZ, "*National Emission Standards for Hazardous Air Pollutants (HAPs) for Stationary Reciprocating Internal Combustion Engines*

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(RICE)". Since the facility requested limits in order to be a synthetic minor source of HAPs, the 1626IR-A, 1626IR-B, and 600W units would be located at an area source of HAPs under 40 CFR 63 Subpart ZZZZ.

The 1626IR-A and 1626IR-B units are both considered existing stationary RICEs located at an area source of HAPs because construction commenced on these units on or before June 12, 2006. Existing spark ignition 4SRB stationary RICE located at an area source of HAPs do not have to meet the requirements of 40 CFR 63 Subpart ZZZZ and 40 CFR 63 Subpart A and no initial notification is necessary (40 CFR 63.6590 (b)(3)).

The 600W would be considered a new stationary RICE located at an area source of HAPs because it would be constructed after June 12, 2006. An affected source of HAPs that is a new or reconstructed stationary RICE located at an area source must meet the requirements of 40 CFR 63 Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart JJJJ for spark ignition engines. There are no further requirements that would apply to this unit under 40 CFR 63 Subpart ZZZZ (40 CFR 63.6590 (c)).

- 40 CFR 60 Subpart JJJJ "*Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE)*". According to the facility, the 600W engine was manufactured before July 1, 2007; therefore, it should not be subject to the applicable requirements of 40 CFR 60 Subpart JJJJ. A facility that commences construction after June 12, 2006 on a SI ICE with a maximum engine power greater than or equal to 500 HP and that is manufactured on or after July 1, 2007 would be subject to 40 CFR 60 Subpart JJJJ (40 CFR 60.4230 (4)(i)).

**Emission Standards:**

The facility requested that the VOC emissions standards for the 1626IR-A and 1626IR-B be increased from 2.9 lb/hr to 6.0 lb/hr. The facility should be allowed to increase the VOC emissions limits on these units because when catalytic converters were initially added to these units the anti-PSD limits were based on the installation of a second 1665CB compressor engine which was never installed by the facility.

There are no emissions standards or limitations for the 600W compressor engine.

**Compliance and Performance Test Methods and Procedures:**

Periodic and annual performance testing should not be required for the 600W compressor engine. The emissions from this unit would not be expected to exceed any thresholds and this unit would not be required to comply with any

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emission limitations or standards. Existing periodic and annual performance testing requirements currently in the permit for the 1626IR-A and 1626IR-B shall be sufficient. The facility is already testing these units for VOC emissions to demonstrate compliance with their permit limits.

**Emissions Monitoring:**

The facility's existing periodic monitoring for the facility engines found in *Appendix B* of Major Source Operating Permit (MSOP) No. 503-4004 shall be sufficient for the 600W compressor engine and the modified VOC emission limits for the 1626IR-A and 1626 IR-B engines. The monitoring plan requires continuous monitoring of the fuel gas volume and semi-annual monitoring of the Btu and sulfur content of the fuel gas.

**Recordkeeping and Reporting Requirements:**

The facility would be required to maintain the same records for the 600W compressor engine that they currently maintain for all of their other permitted engines. The following monthly records would be required to be maintained for a period of five (5) years:

- Engine fuel consumption (Mscf/Month)
- Fuel gas heat content (Btu/scf) and hydrogen sulfide (H<sub>2</sub>S) content of the fuel gas (ppmv)
- Engine fuel heat input (MMBtu/Month)
- Engine operating hours (Hours/Month)
- NO<sub>x</sub>, CO, VOC emissions (lb/Month) and (lb/hour)
- Maintenance performed on the engine

A semi-annual Periodic Monitoring Report (PMR) indicating incidents of deviations as defined in proviso 2 of the *recordkeeping and reporting section* of the MSOP for the facility engines shall be submitted to the Department. The reporting schedule shall be as follows:

<u>Reporting Period</u>	<u>Submittal Date</u>
January 1 <sup>st</sup> through June 31 <sup>st</sup>	July 31 <sup>st</sup>
July 1 <sup>st</sup> through December 31 <sup>st</sup>	January 31 <sup>st</sup>

**CAM Applicability:**

The 1626IR-A and 1626IR-B compressors engines are currently subject to a compliance assurance monitoring (CAM) plan since they use catalytic converters to demonstrate compliance with their emissions standards and the

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emissions from these units are expected to exceed the major source threshold. The existing CAM plan for these units can be found in *Appendix C* of the MSOP.

The facility has proposed installing a catalytic converter on the 600W compressor engine. However, this unit is not required to meet any emission standards or limitations and the uncontrolled emissions from the engine are not expected to exceed the major source thresholds. Therefore, the 600W would not be subject to the applicable requirements of CAM.

**Emissions:**

The expected potential emission from the 600W unit and the emission limits for the 1626IR-A and 1626IR-B are given below in Table 2.

Emission Source	Emissions (TPY)					
	PM	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	Formaldehyde
1626IR-A	1.72E-01	1.07E-02	1.23E+02	6.79E+01	2.63E+01	3.71E-01
1626IR-B	1.72E-01	1.07E-02	1.23E+02	6.79E+01	2.63E+01	3.71E-01
600 W (uncontrolled)	1.58E-01	9.80E-03	7.54E+01	3.52E+01	6.62E+00	3.42E-01
<b>Potential Emissions</b>	<b>5.03E-01</b>	<b>3.11E-02</b>	<b>3.22E+02</b>	<b>1.71E+02</b>	<b>5.92E+01</b>	<b>1.08E+00</b>

*Table 2- Potential Emissions from Newly Added and Modified Emission Sources*

Note that in Table 2 the nitrogen oxide (NO<sub>x</sub>) emissions from the newly added 600W compressor engine appears to exceed the PSD significant threshold of 40 TPY; however, this would not be the case since the emissions from the removed 2600IR-B were netted out. The emissions from this unit are given in Table 3.

Emission Source	Emissions (TPY)					
	PM	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	Formaldehyde
2600IR-B	2.23E-03	1.70E-02	5.52E+01	5.52E+01	2.98E+01	1.53E+00

*Table 3- Potential Emissions from the Removed Emission Source*

A complete review of the netting analysis can be found in the engineering analysis for Air Permit No. 503-004-X017.

Hatter's Pond Gas Production Treating and Processing Facility  
Facility No. 503-4004

**Recommendations**

I recommend that Four Star Oil and Gas Company be issued a modification to MSOP No.: 503-4004 for its Hatters Pond facility, since the facility has properly addressed its applicability to newly promulgated or modified federal regulations. The facility already has controls in place to demonstrate compliance with 40 CFR 63 Subpart HH by routing the process vent vapors from the TEG unit to the flare. The facility flare was also previously required to be smokeless to demonstrate compliance with the NSPS and will now be used to also comply with the NESHAP.

I also recommend that the facility be allowed to incorporate the 600W emission source, found in Air Permit No.: 503-4004-X017, into the MSOP at this time and that the VOC emission limits currently in the MSOP for the 1626IR-A and 1626IR-B compressor engine be increased as requested by the facility from 2.9 lb/hr to 6.0 lb/hr. The facility should be able to meet the requirements of its permits and all federal and state regulations.

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Harlotte Bolden-Wright  
Air Division  
Energy Branch  
Industrial Minerals Section

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February 12, 2009

Date

Hatter's Pond Gas Production Treating and Processing Facility  
Facility No. 503-4004

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Hatter's Pond Gas Production Treating and Processing Facility  
Facility No. 503-4004

***Attachment A:***

*Draft Provisos*

*(Includes only sections modified w/changes highlighted)*

Hatter's Pond Gas Production Treating and Processing Facility  
Facility No. 503-4004

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## MAJOR SOURCE OPERATING PERMIT

Permittee: **Four Star Oil & Gas**

Facility Name: **Hatter's Pond Gas Production, Treating, & Processing Facility**

Facility No.: 503-4004

Location: 1340 Radcliff Road, Creola, Mobile Co., Alabama

*In accordance with and subject to the provisions of the Alabama Air Pollution Control Act of 1971, as amended, Ala. Code 1975, §§22-28-1 to 22-28-23 (2006 Rplc. Vol. and 2007 Cum. Supp.) (the "AAPCA") and the Alabama Environmental Management Act, as amended, Ala. Code 1975, §§22-22A-1 to 22-22A-15, (2006 Rplc. Vol. and 2007 Cum. Supp.) and rules and regulations adopted thereunder, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to construct, install and use the equipment, device or other article described above.*

*Pursuant to the **Clean Air Act of 1990**, all conditions of this permit are federally enforceable by EPA, the Alabama Department of Environmental Management, and citizens in general. Those provisions which are not required under the **Clean Air Act of 1990** are considered to be state permit provisions and are not federally enforceable by EPA and citizens in general. Those provisions are contained in separate sections of this permit.*

Issuance Date: *April 9, 2007*  
Effective Date: *April 24, 2007*  
Modification Date: *DRAFT-2/12/09*  
Expiration Date: *April 23, 2012*

## Summary Page for Facility-wide VHAP Emissions

**Permitted Operating Schedule:**                      **24 Hours/Day x 365 Days/Year = 8760 Hours/Year**

### Emission limitations:

Emission Point #	Description	Pollutant	Emission Limit	Regulation
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### Natural Gas Processing Plant :

All sources within a contiguous area and under common control which emits or may emit hazardous air pollutants.

VHAP

<= 9.9 Tons/yr.  
individual HAP

MACT  
Avoidance

<= 24.9 Tons/yr  
all HAP

MACT  
Avoidance

### Affected Facility:

Tri-ethylene Glycol (TEG)  
Dehydration Unit

[In Urban-1 County with UA plus  
offset and UC boundary]

Benzene

<=0.9 megagrams per year  
(~ 1 Ton/yr)

40 CFR §63.762(e)(ii)

MACT  
Avoidance

## Provisos for Facility-wide VHAP Emissions

Federally Enforceable Provisos	Regulations
<p><i>Applicability</i></p> <ol style="list-style-type: none"> <li>1. This subpart applies to each natural gas processing plant that is subject to emission limitations that allows it to be a synthetic minor source when determining the applicability of National Emission Standards for Hazardous Air Pollutants for major sources of VHAPs.</li> <li>2. The Tri-ethylene Glycol Dehydrator (TEG), the affected area source, located at this facility is subject to the applicable requirements of 40 CFR 63 Subpart HH, “<i>National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities</i>” for an Area Source of HAPs.</li> <li>3. The Tri-ethylene Glycol Dehydrator (TEG) located at this facility is subject to the applicable requirements of ADEM Admin. Code R. 335-3-16-.03, <i>Major Source Operating Permits</i>.</li> <li>4. The Tri-ethylene Glycol Dehydrator (TEG) located at this facility is exempt from the applicable requirements of 40 CFR 64, <i>Compliance Assurance Monitoring</i> for benzene emissions.</li> </ol>	<p>Rule 335-3-14-.01</p> <p>§ 63.760 (a)(1) § 63.760 (b)(2)</p> <p>Rule 335-3-16-.03</p> <p>§ 64.2(b)</p>
<p><i>Emissions Standards</i></p> <ol style="list-style-type: none"> <li>1. As demonstrated by the calculations specified in proviso 1(b) of the recordkeeping and reporting requirements section of this subpart, the total emissions from each natural gas processing plant shall meet the requirements specified in proviso 1(a) and (b) of this section of this subpart. <ol style="list-style-type: none"> <li>(a) Emissions of each hazardous air pollutant (hereafter called HAP) specified in proviso 1(a)(1) through (7) shall not exceed 9.9 tons during any twelve (12) consecutive month period. <ol style="list-style-type: none"> <li>(1) Benzene</li> <li>(2) Ethyl benzene</li> <li>(3) Toluene</li> <li>(4) Xylene</li> <li>(5) n-Hexane</li> <li>(6) Methanol</li> </ol> </li> </ol> </li> </ol>	<p>Rule 335-3-14-.01(g)</p>

## Provisos for Facility-wide VHAP Emissions

Federally Enforceable Provisos	Regulations
<p>(7) Formaldehyde</p> <p>(b) Emissions of all hazardous air pollutant (hereafter called THAP) specified in proviso 1(a) (1) through (7) emissions shall not exceed 24.9 tons during any twelve (12) consecutive month period.</p> <p>2. The actual average emissions of benzene from the TEG dehydration unit process vent to the atmosphere shall be maintain at less than 0.90 megagram per year in order for the facility to be exempt from the general standards found in § 63.764 (d)(1) of 40 CFR Subpart HH.</p> <p>(1) Compliance with the area source requirement of 40 CFR Subpart HH shall be met by January 4, 2010.</p>	<p>§ 63.764 (d)(1)</p> <p>§ 63.764 (e)(1)(ii)</p> <p>§ 63.760 (f)(3)(i)</p>
<p><i>Compliance and Performance Test Methods and Procedures</i></p>	
<p>1. Each process stream that is specified in proviso 1(a) and (b) of this section of this subpart shall be tested for its HAP content in accordance to the requirements specified in proviso 1(c) through and (f) of this section of this subpart.</p> <p>(a) Acid gas entering the thermal oxidizer</p> <p>(1) For the HAP identified in proviso 1(a)(1) through (5) of the emission standards section of this subpart.</p> <p style="text-align: right;">Acid gas HAP ppmv</p> <p>(b) Gas entering the glycol-contacting tower or of the glycol leaving and entering the contacting tower.</p> <p>(1) For the HAP identified in proviso 1(a)(1) through (6) of the emission standards section of this subpart.</p> <p style="text-align: right;">Dehydrator HAP ppmv</p> <p>(c) Each test shall consist of capturing three (3) grab samples with at least a thirty (30) minute interval between samples.</p> <p>(d) The HAP concentration shall be the arithmetic average of the individual analytical results obtained during each test.</p>	<p>Rule 335-3-1-.05</p>

## Provisos for Facility-wide VHAP Emissions

Federally Enforceable Provisos	Regulations
<p>(e) A test shall be conducted on each stream at least once every six months (semi-annually).</p> <p>(1) Provided at least six semi-annual tests analysis have been undertaken, future tests may be conducted on each stream at least once every twelve (12) months upon receipt of Departmental approval.</p> <p>(2) The Department reserves the right to require more frequent tests.</p> <p>(f) A test may be conducted any time between fifteen days prior too and up to fifteen days after the ending date of the respective time interval for conducting the test.</p>	
<p>2. Compliance with proviso 2 of the <i>emissions standards</i> section of this subpart shall be met by:</p>	
<p>(a) Determining the benzene emissions, either uncontrolled or with federally enforceable control in place, using one of the following methods:</p>	<p>§ 63.772 (b)(2)</p>
<p>(1) Determine the actual average benzene emissions using the model GRI-GLYCalc, Version 3.0 or higher, and the procedures presented in the associated GRI-GLYCalc Technical Reference Manual.</p>	<p>§ 63.772 (b)(2)(i)</p>
OR	
<p>(2) Determine an average mass rate of benzene emissions in kilograms per hour (kg/hr) through direct measurement using one of the following methods:</p>	<p>§ 63.772 (b)(2)(i)</p>
<p>(i) Method 18 of 40 CFR 60 Appendix A, OR</p>	<p>§ 63.772 (a)(1)(i)</p>
<p>(ii) ASTM D6420-99(2004), OR</p>	<p>§ 63.772 (a)(1)(i)</p>
<p>(iii) An alternative method according to § 63.7(f)</p>	
<p>(b) Maintaining a record of the data supporting the determination of exemption from the general standards of 40 CFR 60 Subpart HH.</p>	<p>§ 63.764 (e)(1)</p>
<p>(c) Routing all emissions from the TEG dehydrator process vent through a closed vent system to the facility flare.</p>	<p>§63.771 (d)(1)(iii)</p>

## Provisos for Facility-wide VHAP Emissions

Federally Enforceable Provisos	Regulations
<p><i>Emission Monitoring</i></p> <ol style="list-style-type: none"> <li>1. Periodic monitoring in the form of the recordkeeping found in proviso 1 of the recordkeeping and reporting requirements section of this subpart of the permit, is required to demonstrate compliance with provisos 1 (a) and (b) of the emissions standards section of this subpart.</li> <li>2. Monitoring to demonstrate compliance with proviso 2 of the emissions standards section of this subpart shall be met by: <ol style="list-style-type: none"> <li>(a) Meeting the Compliance Assurance Monitoring Plan, found in <i>Appendix E</i> of this permit, for the flare to demonstrate the presence of a flame or spark at the flare tip.</li> <li>(b) Complying with the recordkeeping requirements of 40 CFR §63.774(d)(1)(ii).</li> </ol> </li> </ol>	<p>Rule 335-3-1-.04</p>
<p><i>Recordkeeping and Reporting Requirements</i></p> <ol style="list-style-type: none"> <li>1. For the purpose of demonstrating periodic compliance with the requirements specified in proviso 1 of the emission standards section of this permit, the records of the information and calculations specified in proviso 1(a) through (d) of this section of this subpart shall be maintained. <ol style="list-style-type: none"> <li>(a) Monthly consumption or feed volumes of the streams specified in proviso 1(a)(1) through (3) of this section of this subpart shall be obtained. <ol style="list-style-type: none"> <li>(1) Fuel gas <ol style="list-style-type: none"> <li>(i) Consumption Scf/Month</li> <li>(II) Consumption volumes may be measured on an individual fuel gas combustion device (i.e. boiler, heater &amp; engine) basis or on any combination of fuel gas combustion devices that have the same emission factors.</li> <li>(ii) Btu content Btu/Scf</li> </ol> </li> <li>(2) Acid gas entering thermal oxidizer Acid gas Scf/Month</li> </ol> </li> </ol> </li> </ol>	<p>Rule 335-3-1-.04</p>

## Provisos for Facility-wide VHAP Emissions

Federally Enforceable Provisos	Regulations
<p>(i) Shall consist of the accumulation of the volume of gas entering the thermal oxidizer from the treating unit over a period of time.</p> <p>(3) Glycol dehydration unit feed Dehydrator Scf/Month</p> <p>(i) Shall consist of the accumulation of the volume of gas entering the contacting tower of the dehydration unit over a period of time.</p> <p>(b) Monthly HAP emissions from the sources specified in proviso 1(b)(1) through (4) of this section of this subpart shall be calculated in accordance to the requirements specified therein.</p> <p>(1) Fuel gas combustion device HAP emissions shall be calculated in accordance with the methods and procedures specified in proviso 1(b)(1)(i) through (v) of this section of this subpart.</p> <p>(i) While utilizing the consumption rate of either an individual fuel gas combustion device or a combination of fuel gas combustion devices obtained in accordance to proviso 1(a)(1)(i) of this section of this subpart.</p> <p style="text-align: center;">and</p> <p>(ii) The fuel gas Btu content obtained in accordance to proviso 1(a)(1)(ii) of this section of this subpart.</p> <p style="text-align: center;">and</p> <p>(iii) The HAP pollutant emission factors (Lbs/MMBtu) found in the latest stack test for the make and model of combustion device, the latest EPA "AP-42" publication, GRI-HAPCalc™ Version 2.0 or greater, GRI-HAPData™ Version 1.0 or greater or other Departmental approved sources.</p> <p style="text-align: center;">In conjunction with</p> <p>(iv) The following equation :</p> $\frac{[ \{ (\text{Scf/Month}) \times (\text{Btu/Scf}) \} \times \{ \text{HAP Lbs/MMBtu} \} ]}{[ 1,000,000 \text{ Btu/MMBtu} ]}$	

## Provisos for Facility-wide VHAP Emissions

Federally Enforceable Provisos	Regulations
<p>(v) Emission estimate may be made on an individual combustion device basis or on any combination of combustion devices that have the same emission factors.</p> <p>(2) Thermal oxidizer HAP emissions shall be calculated in accordance with the methods and procedures specified in Proviso 1(b)(2)(i) through (v) of this section of this subpart.</p> <p>(i) While utilizing the flow rate of the acid gas entering the thermal oxidizer obtained in accordance to proviso 1(a)(2) of this section of this subpart.</p> <p style="text-align: center;">and</p> <p>(ii) The acid gas HAP ppmv that was obtained in accordance to proviso 1(a)(1) of the compliance and performance test methods and procedures section of this subpart.</p> <p style="text-align: center;">and</p> <p>(iii) The molecular weight of the individual HAP pollutant.</p> <p style="text-align: center;">and</p> <p>(iv) Either a control efficiency assumption of</p> <p style="padding-left: 40px;">(I) 98 % if controlled by a combustion device.</p> <p style="text-align: center;">or</p> <p style="padding-left: 40px;">(II) 95% if controlled by a condensing device.</p> <p style="padding-left: 40px;">In conjunction with</p> <p>(v) The following equation :</p> $\frac{[ \text{Acid gas Scf/Month} ] \times [ \text{Acid gas HAP ppmv} ] \times [ \text{HAP Lbs/Lb. Mole} ] \times [ 1.0 - \text{Eff.} ]}{[ 380 \text{ Scf/Lb. Mole} ] \times [ 1,000,000 \text{ ppmv}]}$ <p>(3) Gas dehydration unit HAP emissions shall be calculated in accordance with the methods and procedures specified in proviso 1(b)(3)(i) through (iv) of this section of this subpart.</p>	

## Provisos for Facility-wide VHAP Emissions

Federally Enforceable Provisos	Regulations
<p>(4) Gas dehydration unit HAP emissions shall be calculated in accordance with the methods and procedures specified in proviso 1(b)(3)(i) through (iv) of this section of this subpart.</p> <p style="padding-left: 40px;">(i) While utilizing the latest stack test, GRI-GLYCalc™ Version 2.0 or greater computer model or other Departmental approved sources.</p> <p style="text-align: center;">and</p> <p style="padding-left: 40px;">(ii) The acid gas HAP ppmv that was obtained in accordance to proviso 1(b)(1) of the compliance and performance test methods and procedures section of this subpart.</p> <p style="text-align: center;">and</p> <p style="padding-left: 40px;">(iii) Dehydrator Scf/Month obtained in accordance to proviso 1(a)(3)(i) of this section of this subpart.</p> <p style="text-align: center;">and</p> <p style="padding-left: 40px;">(iv) Either a control efficiency assumption of</p> <p style="padding-left: 80px;">(I) 98 % if controlled by a combustion device.</p> <p style="text-align: center;">or</p> <p style="padding-left: 80px;">(II) 95% if controlled by a condensing device.</p> <p>(5) Equipment fugitive HAP emissions shall be calculated in accordance with the methods and procedures specified proviso 1(b)(4)(i) or 1(b)(4)(ii) or 1(b)(4)(iii) of this section of this subpart.</p> <p style="padding-left: 40px;">(i) HAP emissions shall be calculated in accordance with the methods and procedures specified in the latest EPA protocol (i.e. EPA-453/R-95-017 document) for making such estimates and as speciated relative to the HAP composition of the respective process stream.</p> <p style="text-align: center;">OR</p> <p style="padding-left: 40px;">(ii) HAP emissions shall be calculated utilizing the most current AP-42 factors.</p> <p style="text-align: center;">OR</p> <p style="padding-left: 40px;">(iii) HAP emissions shall be calculated utilizing any other method required or allowed by the Department.</p>	

## Provisos for Facility-wide VHAP Emissions

Federally Enforceable Provisos	Regulations
<p>(c) Monthly HAP and THAP emissions for the entire plant shall be calculated by accumulating the HAP emissions determined in proviso 1(b) of this section of this permit.</p> <p>(d) Twelve (12) consecutive month HAP and THAP emissions for the entire plant shall be calculated by accumulating the current monthly emissions determined in proviso 1(c) of this section of this subpart along with the previous eleven month's estimate.</p> <p>(1) Provided at least twenty four (24) monthly emission estimates have been obtained, the month in which to make the new emission estimates may be modified to every third month (quarterly) upon receipt of Departmental approval.</p> <p>(2) Provided at least twelve quarterly emission estimates have been obtained, the month in which to make the new emission estimates may be modified to every sixth month (semi-annual) upon receipt of Departmental approval.</p> <p>2. To demonstrate compliance with the monitoring found in proviso 2 of the emissions monitoring section of this subpart of the permit, the following records shall be maintained:</p> <p>(a) Records of the actual average benzene emissions in tons per year as determined in accordance with §63.772(b)(2).</p> <p>(b) Monthly record of the operating hours for the TEG dehydrator.</p> <p>3. The facility shall submit a copy of the benzene emissions for the TEG dehydrator to the Department as part of the Title V emission estimates.</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p>§63.774(d)(1)(ii)</p> <p></p> <p>Rule 335-3-16</p>

## Summary Page for the Facility Engines

**Permitted Operating Schedule:** 24 Hours/Day x 365 Days/Year = 8760 Hours/Year

### Emission limitations:

Emission Point #	Description	Pollutant	Emission Limit	Regulation
2700CB	(1) 2,700 BHP, 2 Cycle, Lean Burn, Gas Fired Engine—Combo Compressor Engine	NO <sub>x</sub> CO SO <sub>2</sub> VOC Opacity	17.8 lb/hr 9.5 lb/hr None 8.9 lb/hr < 20%	Rule 335-3-14-.04 [PSD] Rule 335-3-14-.04 [PSD]  Rule 335-3-14-.04 [PSD] Rule 335-3-4-.01(1)
2600IR-A & 2600IR-B	(1) 2,600 BHP, 4 Cycle, Lean Burn, Gas Fired Engines—Injection Compressor Engines	NO <sub>x</sub> CO SO <sub>2</sub> VOC Opacity	12.6 lb/hr 12.6 lb/hr None 6.8 lb/hr < 20%	Rule 335-3-14-.04 [PSD] Rule 335-3-14-.04 [PSD]  Rule 335-3-14-.04 [PSD] Rule 335-3-4-.01(1)
1665C	(1) 1665 BHP, 4 Cycle, Clean Burn, Gas Fired Engine—Inlet Compressor Engines	NO <sub>x</sub> CO SO <sub>2</sub> VOC Opacity	9.1 lb/hr 22.8 lb/hr None 9.1 lb/hr < 20%	Rule 335-3-14-.04 [Anti-PSD] Rule 335-3-14-.04 [Anti-PSD]  Rule 335-3-14-.04 [Anti-PSD] Rule 335-3-4-.01(1)
1642W	(1) 1642 BHP, 4 Cycle, Rich Burn, Gas Fired Engine—Inlet Gas Compressor Engine	NO <sub>x</sub> CO SO <sub>2</sub> VOC Opacity	9.1 lb/hr 22.8 lb/hr None None < 20%	Rule 335-3-14-.04 [Anti-PSD] Rule 335-3-14-.04 [Anti-PSD]   Rule 335-3-4-.01(1)
1626IR-A & 1626IR-B	(2) 1626 BHP, 4 Cycle, Rich Burn, Gas Fired Engines—Combo Compressor Engines	NO <sub>x</sub> CO SO <sub>2</sub> VOC Opacity	28.1 lb/hr 15.5 lb/hr None 2.9 6.0 lb/hr < 20%	Rule 335-3-14-.04 [Anti-PSD] Rule 335-3-14-.04 [Anti-PSD]  Rule 335-3-14-.04 [Anti-PSD] Rule 335-3-4-.01(1)
377C	(1) 377 BHP, 4 Cycle, Clean Burn, Gas Fired Engine—Lift Gas Engine	NO <sub>x</sub> CO SO <sub>2</sub> VOC Opacity	1.5 2.6 None 1.0 < 20%	Rule 335-3-14-.04 [Anti-PSD] Rule 335-3-14-.04 [Anti-PSD]  Rule 335-3-14-.04 [Anti-PSD] Rule 335-3-4-.01(1)
660CB-A & 660CB-B	(2) 660 BHP, 2 Cycle, Lean Burn, Gas Fired Engines—Inlet Compressor Engines	NO <sub>x</sub> CO SO <sub>2</sub> VOC Opacity	None None None None < 20%	    Rule 335-3-4-.01(1)
600W	(1) 600 BHP, 4 Cycle, Rich Burn, Gas Fired Compressor Engine	NO <sub>x</sub> CO SO <sub>2</sub> VOC Opacity	None None None None < 20%	    Rule 335-3-4-.01(1)

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<i>Applicability</i>	
1. Engine Nos. 2700CB and 2600IR-A, <del>and 2600IR-B</del> are subject to the Prevention of Significant Deterioration regulations.	Rule 335-3-14-.04
2. All engines, except those noted in proviso 1 of this section of this subpart of this permit, have emission limitations that allow them to be synthetic minor sources when determining applicability of Prevention of Significant Deterioration regulations.	Rule 335-3-14-.04
3. These engines are located at a facility that meets the requirements specified in Rule 335-3-16-.03 and therefore these engines shall be subject to Rule 335-3-16 and this subpart of this permit.	Rule 335-3-16-.03
4. These engines are located at a facility with emission limitations which allows them to be synthetic minor sources when determining applicability of the major source requirements of MACT regulations, specifically Subpart ZZZZ of 40 CFR 63.	§63.6590(a) & (b)
5. Engine Nos. 2600IR-A, <del>2600IR-B</del> , 1642W, 1626IR-A, and 1626IR-B are pollutant-specific emission units that rely on control devices to achieve compliance shall be subject to 40 CFR Part 64, proviso 33 of the <i>General Permit Provisos</i> subpart and this subpart of this permit.	40 CFR 64
<i>Emission Standards</i>	
1. These engines shall adhere to the following emission limits:	Rule 335-3-16-.05(a) & Rule 335-3-14-.04
(a) For the 2700 BHP Cooper-Bessemer Combo Compressor Engine [Unit 2700CB]:	
(1) Carbon monoxide (CO) emissions shall not exceed 9.5 Lbs/Hour.	
(2) Nitrogen oxide (NO <sub>x</sub> ) emissions shall not exceed 17.8 Lbs/Hour.	
(3) Volatile organic compound (VOC) emissions shall not exceed 8.9 Lbs/Hour.	

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<p>(b) For each of the two 2600 BHP Ingersoll-Rand Injection Compressor Engines [Units 2600IR-A] &amp; 2600-IR-B]:</p> <p>(1) Carbon monoxide (CO) emissions shall not exceed 12.6 Lbs/Hour.</p> <p>(2) Nitrogen oxide (NO<sub>x</sub>) emissions shall not exceed 12.6 Lbs/Hour.</p> <p>(3) Volatile organic compound (VOC) emissions shall not exceed 6.8 Lbs/Hour.</p> <p>(c) For the 1665 BHP Inlet Compressor Engine [Unit 1665C]:</p> <p>(1) Carbon monoxide (CO) emissions shall not exceed 22.8 Lbs/Hour.</p> <p>(2) Nitrogen oxide (NO<sub>x</sub>) emissions shall not exceed 9.1 Lbs/Hour.</p> <p>(3) Volatile organic compound (VOC) emissions shall not exceed 9.1 Lbs/Hour.</p> <p>(d) For the 1642 BHP Inlet Compressor Engine [Unit 1642W]:</p> <p>(1) Carbon monoxide (CO) emissions shall not exceed 22.8 Lbs/Hour.</p> <p>(2) Nitrogen oxide (NO<sub>x</sub>) emissions shall not exceed 9.1 Lbs/Hour.</p> <p>(e) For each of the two 1626 BHP Combo Compressor Engines [Units 1626IR-A &amp; 1626IR-B]:</p> <p>(1) Carbon monoxide (CO) emissions shall not exceed 15.5 Lbs/Hour.</p> <p>(2) Nitrogen oxide (NO<sub>x</sub>) emissions shall not exceed 28.1 Lbs/Hour.</p> <p>(3) Volatile organic compound (VOC) emissions shall not exceed <del>2.9</del> 6.0 Lbs/Hour.</p>	

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<p>(f) For the 377 BHP Lift Gas Engines [Unit 377C]:</p> <p>(1) Carbon monoxide (CO) emissions shall not exceed 2.6 Lbs/Hour.</p> <p>(2) Nitrogen oxide (NO<sub>x</sub>) emissions shall not exceed 1.5 Lbs/Hour.</p> <p>(3) Volatile organic compound (VOC) emissions shall not exceed 1.0 Lbs/Hour.</p> <p>2. Each of engine shall meet the requirements specified in 2(a) and (b) of this section of this subpart.</p> <p>(a) Except for one 6-minute period during any 60-minute period, the engine shall not discharge into the atmosphere particulate that results in an opacity greater than 20%, as determined by a 6-minute average.</p> <p>(b) At no time shall the engine discharge into the atmosphere particulate that results in an opacity greater than 40%, as determined by a 6-minute average.</p>	<p>Rule 335-3-4-.01(1)</p>
<p><i>Compliance and Performance Test Methods and Procedures</i></p> <p>1. The following testing frequency shall be adhered to for a five year cycle for all units except those specified in provisos 8 or 9 of this section of this subpart of this permit:</p> <p>(a) During year 1, each engine shall be tested according to the requirements outlined in proviso 2 of this section of this subpart of this permit.</p> <p>(b) During years 2, 3, 4, and 5, each engine shall be tested according to either:</p> <p>(1) The requirements outlined in proviso 2 of this section of this subpart of this permit.</p> <p style="text-align: center;">OR</p> <p>(2) EPA's Conditional Test Method (CTM-034) AND Methods 18 &amp; 19 of 40 CFR 60.</p>	

Rule 335-3-16-.05(c)(1)(i)  
& Rule 335-3-1-.05

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<p>2. The methods specified in paragraph 2(a) through (c) of this section of this subpart of this permit shall be utilized according to the frequency outlined in proviso 1 of this section of this subpart of this permit:</p> <p>(a) NO<sub>x</sub> testing for each engine shall follow the requirements specified in either paragraph 2(a)(1), (2), (3), (4), (5), (6), or (7) of this section.</p> <p>(1) 40 CFR 60 Appendix A, Method 7; or</p> <p>(2) 40 CFR 60 Appendix A, Method 7A; or</p> <p>(3) 40 CFR 60 Appendix A, Method 7B; or</p> <p>(4) 40 CFR 60 Appendix A, Method 7C; or</p> <p>(5) 40 CFR 60 Appendix A, Method 7D; or</p> <p>(6) 40 CFR 60 Appendix A, Method 7E; or</p> <p>(7) Other methodology approved by the Department.</p> <p>(b) CO testing for each engine shall follow the requirements specified in either paragraph 2(b)(1), (2), (3) or (4) this section.</p> <p>(1) 40 CFR 60 Appendix A, Method 10; or</p> <p>(2) 40 CFR 60 Appendix A, Method 10A; or</p> <p>(3) 40 CFR 60 Appendix A, Method 10B; or</p> <p>(4) Other methodology approved by the Department.</p> <p>(c) VOC testing shall follow the requirements specified in either paragraph 1(c)(1), (2), (3), (4), (5), (6), (7) or (8) of this section.</p> <p>(1) 40 CFR 60 Appendix A, Method 18; or</p> <p>(2) 40 CFR 60 Appendix A, Method 25; or</p> <p>(3) 40 CFR 60 Appendix A, Method 25A; or</p> <p>(4) 40 CFR 60 Appendix A, Method 25B; or</p> <p>(5) 40 CFR 60 Appendix A, Method 25C; or</p>	<p>Rule 335-3-16-.05(c)(1)(i) &amp; Rule 335-3-1-.05</p>

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<p>(6) 40 CFR 60 Appendix A, Method 25D; or</p> <p>(7) 40 CFR 60 Appendix A, Method 25E; or</p> <p>(8) Other methodology approved by the Department.</p> <p>3. Determine the emission factor for engine in pounds per million BTU during the above test. [Test (Lbs/MMBTU)]</p> <p>4. The frequency of this testing may be modified upon receipt of Department approval.</p> <p>5. The fuel gas shall be tested for BTU and hydrogen sulfide content in accordance to the requirements specified in proviso 5(a) through (c) of this section of this subpart.</p> <p>(a) BTU and hydrogen sulfide content testing shall occur at a frequency of no less than once every six (6) months.</p> <p>(b) Each sample shall be analyzed for its BTU content by utilizing the ASTM Analysis Method D1826-77 or equivalent method. [ Fuel Gas BTU/Scf ]</p> <p>(c) Each sample collected shall be analyzed utilizing the Tutwiler procedures found in 40 CFR §60.648 or the chromatographic analysis procedures found in ASTM E-260 or the stain tube procedures found in GPA 2377-86 or those provided by the stain tube manufacture. [ Fuel Gas (H<sub>2</sub>S ppmv) ]</p> <p>(d) The frequency of analysis may be modified upon receiving Departmental approval.</p> <p>6. For redundant and/or similar units, the facility may request permission to test a statistical sampling of the units.</p> <p>7. The testing frequency as stated in proviso 1 of this section of this subpart of this permit may be modified upon receipt of Departmental approval.</p>	<p>Rule 335-3-1-.05</p> <p>Rule 335-3-1-.05</p> <p>Rule 335-3-16-.05(c)(1)(i) Rule 335-3-1-.05</p> <p>Rule 335-3-1-.04</p> <p>Rule 335-3-1-.04</p>

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<p>8. The 660CB-A, 660CB-B, 377C, and 600W (2) 660 BHP and (1) 377 BHP engines are exempt from the periodic and annual performance tests.</p>	<p>Rule 335-3-1-.04</p>
<p>9. If the total operating hours for any unit subject to a periodic monitoring test as outlined in proviso 1(b) of this section of this subpart of this permit are less than 500 hours over a consecutive 12-month period, then the facility may request a waiver for the required periodic monitoring test.</p>	<p>Rule 335-3-1-.04</p>
<p><i>Emission Monitoring</i></p>	
<p>1. Monitoring meeting the requirements specified in Appendix B of this permit shall be utilized for each facility engine.</p>	<p>Rule 335-3-16-.05(c)(1), Rule 335-3-1-.04, &amp; Rule 335-3-16-.05(c)(1)(ii)</p>
<p>2. Monitoring meeting the requirements specified in Appendix C of this permit shall also be utilized for each facility engine equipped with a catalytic converter, except for the 600W compressor engine.</p>	<p>Rule 335-3-16-.05(c)(1), Rule 335-3-1-.04, Rule 335-3-16-.05(c)(1)(ii), &amp; §64.6(b) &amp; (c)</p>
<p>(a) The monitored parameter may be changed only upon Departmental approval.</p>	
<p>3. Provided an exceedance and/or deviation occurs, the owner or operator of the facility shall comply with the requirements specified in §64.7(d).</p>	<p>§64.7(d)</p>
<p>(a) Compliance shall be demonstrated by meeting the requirements specified in proviso §64.7(d)(2) and provisos 2 and 3 of the <i>recordkeeping and reporting</i> section of this subpart.</p>	
<p>4. When possible and practicable, a continuous metering system shall be utilized that is capable of continuously monitoring and recording the fuel gas flow rate to each engine.</p>	
<p>(a) The continuous measurement may be made with a single meter through which all of the fuel gas for identical make and model engines flow.</p>	
<p>(1) Calibration, maintenance and operation of metering system shall be performed in accordance to manufacturer's specification.</p>	

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<p>(b) Volumetric flow of fuel gas streams that are not continuously measured shall be accounted for by utilizing special estimating methods (i.e. engineer estimates, material balance, computer simulation, special testing etc.).</p>	
<p><i>Recordkeeping and Reporting Requirements</i></p>	
<p>1. For the purpose of indicating compliance with proviso 1 of the <i>emission standards</i> section of this subpart, a monthly record of the information specified in provisos 1(a) through (d) of this section of this subpart shall be maintained and made available for inspection for each engine for a period of five (5) years.</p>	<p>Rule 335-3-16-.05I(2), &amp; Rule 335-3-1-.04</p>
<p>(a) Engine emissions:</p> <p>(1) Engine fuel consumption [Engine Fuel (MScf/Month) ]</p> <p>(2) Fuel gas heat content [ Fuel Heat Content (BTU/Scf) ]</p> <p>(3) Fuel gas hydrogen sulfide content [ Fuel H<sub>2</sub>S (ppmv) ]</p> <p>(4) Engine Fuel (MMBTU/Month) =  <math display="block">\frac{[\text{Engine Fuel (MScf/Month)}] \times [\text{Fuel Heat Content (BTU/Scf)}]}{1000}</math></p> <p>(5) Engine operating hours = [Hours/Month]</p> <p>(6) NO<sub>x</sub>, CO, &amp; VOC emissions shall be determined as follows:</p> <p>(i) Emissions [Lbs/Month] =  <math display="block">[\text{Engine Fuel (MMBTU/Month)}] \times [\text{Test (Lbs/MMBTU) }]</math></p> <p>(I) [Test Lbs/MMBTU] shall be equal to the most recent engine tests results for NO<sub>x</sub>, CO, &amp; VOC, or AP-42 values, or other approved sources.</p> <p>(ii) Emissions [Lbs/Hour] =  <math display="block">\frac{\text{Emissions [Lbs/Month]}}{\text{Engine operating hours [Hours/Month]}}</math></p>	

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<p>(b) Maintenance performed</p> <p>(c) The frequency of the calculations may be modified upon Departmental approval.</p> <p>2. For the purpose of demonstrating compliance with proviso 21(a) of the <i>general provisos</i> subpart of this permit, a monitoring report meeting the requirements specified in proviso 2(a) and proviso 2(b) or both of this section of this subpart shall be submitted to the Department.</p> <p>(a) Each report shall identify each incidence of deviation from a permit term or condition including those that occur during startups, shutdowns, and malfunctions.</p> <p>(1) A deviation shall mean any condition determined by observation, by data collected by any continuous monitoring system or periodic monitoring required by the permit that can be used to determine compliance, that identifies an affected source has failed to meet an applicable emission limit or standard or that a work practice was not complied with or completed.</p> <p>(2) If no deviation event occurred during the reporting period, a statement that indicates there were no deviations from the permit requirements shall be included in the report.</p> <p>(b) A Periodic Monitoring Report meeting the requirements specified in provisos 2(b)(1) through (3) of this section of this subpart shall be submitted to the Department.</p> <p>(1) As demonstrated by the requirements specified in provisos 3 through 5 of the <i>emission monitoring</i> section of this subpart and proviso 1 of the <i>recordkeeping and reporting</i> section of this subpart, a deviation shall consist of any period when the catalyst was deemed to be defective.</p>	<p>Rule 335-3-16-.05I(3)(i)</p>

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<p>(2) As demonstrated by the requirements specified in provisos 3 of the <i>emission monitoring</i> section of this subpart and proviso 1 of the <i>recordkeeping and reporting</i> section of this subpart, a deviation shall consist of any period during which the CO, NO<sub>x</sub>, and/or VOC emissions from the engines exceeded the limit allowed in proviso 1 of the <i>emission standards</i> section of this subpart.</p> <p>(3) Except as provided for in proviso 2I of this section, the report shall meet the requirements specified in proviso 2(b)(3)(i).</p> <p>(i) For each deviation event, the following information shall be submitted.</p> <p>(I) Emission source description</p> <p>(II) Permit requirement</p> <p>(III) Date</p> <p>(IV) Starting time</p> <p>(V) Duration</p> <p>(VI) Actual quantity</p> <p>(VII) Cause</p> <p>(VIII) Action taken to return to compliance</p> <p>(IX) Total operating hours of the affected source during the reporting period</p> <p>(X) Total hours of deviation events during the reporting period</p> <p>(XI) Total hours of deviation events that occurred during start ups, shut downs, and malfunctions during the reporting period</p>	

## Provisos for the Facility Engines

Federally Enforceable Provisos	Regulations
<p>(4) Each report shall cover a calendar semi-annual period and shall be submitted within thirty days of the end reporting period.</p> <p>(c) The report content and format in proviso 2(b) of this section may be modified upon receipt of Departmental approval.</p> <p>3. Each deviation from the requirements specified in provisos 1 through 3 of the <i>emission standards</i> section of this subpart, including those that occur during start ups, shut downs, and malfunctions, shall be reported to the Department in a manner that complies with proviso 15(b) and 21(b) of the general proviso subpart of this permit.</p>	<p>Rule 335-3-16-.05I(3)(ii)</p>

## Summary Page for the Facility Flares

**Permitted Operating Schedule:** 24 Hours/Day x 365 Days/Year = 8760 Hours/Year

### Emission limitations:

Emission Point #	Description	Pollutant	Emission Limit	Regulation
FF BFF	Main Facility Flare & Back-up Facility Flare	H <sub>2</sub> S	20 ppbv of H <sub>2</sub> S off site	Rule 335-3-5-.03(2)
	@ Available Sulfur <= 5 Ltons/Day	SO <sub>2</sub>	Unlimited	Rule 335-3-5-.03(3)
		NO <sub>x</sub>	None	
		VOC	None	
		CO	None	
		Opacity	Smokeless	40 CFR 60.18I 40 CFR 63.11(b)

## Provisos for the Facility Flares

Federally Enforceable Provisos	Regulations
<i>Applicability</i>	
1. These flares are located at a facility that meets the requirements specified in Rule 335-3-16-.03 and therefore these flares shall be subject to Rule 335-3-16 and this subpart of this permit.	Rule 335-3-16-.03
2. Each facility that handles gas or refinery gas that contains more than 0.10 grains of hydrogen (H <sub>2</sub> S) per standard cubic foot (Scf) shall be subject to this subpart.	Rule 335-3-5-.03(1)
3. These flares shall be subject to 40 CFR Part 64, as outlined in proviso 33 of the <i>General Permit Provisos</i> subpart and this subpart of this permit.	40 CFR 64
4. The facility flares are used to comply with 40 CFR 60, Subparts K <sub>a</sub> and K <sub>b</sub> , Subpart KKK, “Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants”, since emissions from the pressure relief valves are tied into the flare header.	§60.18(a), §60.112a, & §60.112b §60.633(g) §60.482-10(d)
5. The facility flares are used to comply with 40 CFR 63 Subpart HH, “National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities”, since emissions from the triethylene glycol (I) dehydration unit’s process vents are routed to the flare through a closed vent system.	§63.11(b) §63.772(b)(2) §63.771(d)(1)(iii)
<i>Emission Standards</i>	
1. Provided available sulfur is equal to or less than 5 long tons per day, there is no limit on sulfur dioxide emissions.	Rule 335-3-16-.05(a), Rule 335-3-5-.03(3), & Rule 335-3-14-.04
2. All process gas streams containing 0.10 of a grain of hydrogen sulfide per Scf shall be burned to the extent that the ground level concentrations of hydrogen sulfide shall be less than twenty (20) parts per billion beyond plant property limits, averaged over a thirty (30) minute period.	Rule 335-3-5-.03(2)
3. Since these flares are used to comply with 40 CFR 60, Subparts K <sub>a</sub> and K <sub>b</sub> , Subpart KKK and 40 CFR 63, Subpart HH, the facility flares shall be :	§60.18 §63.11
(a) Operated with no visible emissions, as demonstrated by the methods outlined in §60.18(f), except for a 5-minute period during any consecutive 2-hour period.	§60.18I(1) §63.11(b)(4)

## Provisos for the Facility Flares

Federally Enforceable Provisos	Regulations	
(b) Operated at all times when emissions may be vented to them.	§60.18(e) §63.11(b)(3)	
(c) Operated with a flame present at all times.	§60.18I(2) §63.11(b)(5)	
(d) Steam-assisted, air-assisted, or nonassisted.	§60.18I(6) §63.11(b)(2)	
Compliance and Performance Test Methods and Procedures		
1. For the purpose of demonstrating compliance with provisos 1 and 2 of the <i>emission standards</i> section of this subpart, each process stream that can be sent to the flare shall be tested in accordance to the requirements specified in proviso 1(a) and (b) of this section of this subpart.	Rule 335-3-16-.05I(1)(i) & Rule 335-3-1-.05	
(a) The hydrogen sulfide content of each process stream shall be determined in accordance to the requirements specified in proviso 1(a)(1) and (2) of this section of this subpart.		
(1) Testing shall consist of capturing one representative sample of the stream at a frequency of no less than once each month.		
(2) The sample collected shall be analyzed utilizing the Tutwiler procedures found in §60.648 or the chromatographic analysis procedures found in ASTM E-260 or the stain tube procedures found in GPA 2377-86 or those provided by the stain tube manufacture.		
[ Stream (H <sub>2</sub> S Mole %) ]		
(b) The volatile organic compound weight percent and BTU content and molecular weight of each process stream shall be determined in accordance to the requirements specified in proviso 1(b)(1) and (2) of this section of this subpart.		
(1) A representative sample of the stream shall be captured and analyzed at a frequency of no less than once each twelve (12) months.		

## Provisos for the Facility Flares

Federally Enforceable Provisos	Regulations
<p>(2) The sample collected shall be analyzed utilizing ASTM Analysis Method D1826-77, chromatographic analysis procedures found in 40 CFR Part 60 <i>Appendix A</i>, Method 18 or equivalent methods and procedures.</p> <p style="padding-left: 40px;">[ Stream (Mole Wt) ] [ Stream (VOC Wt %) ] [ Stream (BTU/Scf ) ]</p> <p>(c) Provided multiple process streams can be sent to the flare and it is possible to capture a common stream whose contents would be representative of all the streams, that common stream may be used instead of the individual process streams.</p> <p>(d) Each process gas stream that has to be vented to the atmosphere shall be captured and sent to the thermal oxidizer or the flare so that it can be burned.</p> <p>(1) Compliance shall be demonstrated by conducting a process flow design evaluation of the production facility in conjunction with a visual inspection of the facility.</p> <p>(2) Except when vessels and equipment are being de-pressured and/or emptied and the reduced pressure will not allow flow of the gas to a control device, the venting to the atmosphere of any process gas stream that is subject to this proviso for a duration in excess of 15 continuous minutes shall be deemed a exceedance of requirements specified in proviso 3 of the <i>emission standards</i> section of this subpart.</p> <p>(e) The frequency of this testing may be modified upon receipt of Department approval.</p> <p>2. For the purpose of demonstrating compliance with proviso 3 of the <i>emission standards</i> section of this subpart, methods and monitoring as specified in proviso 2 of the <i>emission monitoring</i> section of this subpart shall be undertaken.</p>	
<p><i>Emission Monitoring</i></p> <p>1. Monitoring meeting the requirements specified in the <i>Appendix E</i> of this permit shall be utilized for the facility flares.</p>	<p>Rule 335-3-16-.05I(1), Rule 335-3-1-.04, Rule 335-3-16-.05I(1)(ii) &amp; §64.6(b) &amp; (c)</p>

## Provisos for the Facility Flares

Federally Enforceable Provisos	Regulations
<p>2. Compliance with proviso 3 of the <i>emission standards</i> section of this subpart of this permit shall be conducted according to the monitoring plan outlined in <i>Appendix G</i> of this permit for each operating facility flare.</p> <p><i>Record Keeping and Reporting Requirements</i></p> <p>1. For the purpose of indicating compliance with provisos 1 and 2 of the <i>emission standards</i> section of this subpart, a monthly record of the information specified in provisos 1(a) through (h) of this section of this subpart shall be maintained and made available for inspection.</p> <p>(a) Volume of gas burned in flare =  <math display="block">[ \text{Stream Volume Burned (MScf/Month)} ]</math></p> <p>(b) Stream (MMBTU/Month) =  <math display="block">[ \text{Stream Volume Burned (MScf/Month)} ] \times [ 1000 \text{ Scf/1 MScf} ]</math> <math display="block">[ \text{Stream (BTU/SCF)} ] \times [ 1 \text{ MMBTU/1000000 BTU} ]</math></p> <p>(c) Stream H<sub>2</sub>S (Lbs/Month) =  <math display="block">[ \text{Stream Volume Burned (MScf/Day)} ] \times [ 1000 \text{ Scf/MScf} ] \times</math> <math display="block">[ 1 \text{ Mole/380 SCF} ] \times [ \{ \text{Stream (H}_2\text{S Mole \%)} \} / \{ 100 \} ] \times</math> <math display="block">[ 34 \text{ Lbs. H}_2\text{S/Mole H}_2\text{S} ]</math></p> <p>(d) Flare H<sub>2</sub>S Feed Rate (Lbs/Month) =  <math display="block">\Sigma \text{ of Stream H}_2\text{S (Lbs/Month)}</math></p> <p>(e) Number of hours that the flare was operated during the month =  <math display="block">[ \text{Flare (Hours/Month)} ]</math></p> <p>(f) H<sub>2</sub>S feed (Lbs/Hour) =  <math display="block">\frac{\text{Flare H}_2\text{S Feed Rate (Lbs/Month)}}{\text{Flare (Hours/Month)}}</math></p> <p>(g) Flare SO<sub>2</sub> (Lbs/Month) =  <math display="block">\frac{[ \text{Flare H}_2\text{S Feed Rate (Lbs/Month)} ] \times [ 64 \text{ Lbs of SO}_2\text{/ Lb Mole} ] \times [ 0.98 ]}{[ 34 \text{ Lbs H}_2\text{S/Lb Mole} ]}</math></p> <p>(h) Flare (MMBTU/Month) =  <math display="block">\Sigma \text{ of Stream (MMBTU/Month)}</math></p>	<p>§60.18(f)  §63.11(b)(4) &amp; §63.11(b)(5)</p> <p>Rule 335-3-16-.05I(2)  Rule 335-3-1-.04  §64.9</p>

## Provisos for the Facility Flares

Federally Enforceable Provisos	Regulations
<p>(i) The date, starting time, and duration of each deviation or exceedance of the requirements specified in provisos 2 and 3 of the <i>emission standards</i> section of this subpart along with the cause and corrective actions taken.</p> <p>(j) The date, starting time, and duration of each time the H<sub>2</sub>S feed rate exceeded 500 lb/hr, along with the cause and corrective actions taken. This exceedance is defined as a deviation.</p> <p>2. For the purpose of demonstrating compliance with proviso 21(a) of the <i>General Provisos</i> subpart of this permit, a monitoring report meeting the requirements specified in proviso 2(a) and 2(b) of this section of this subpart shall be submitted to the Department.</p> <p>(a) Each report shall identify each incidence of deviation from a permit term or condition including those that occur during startups, shutdowns, and malfunctions.</p> <p>(1) A deviation shall mean any condition determined by observation, by data collected by any continuous monitoring system or periodic monitoring required by the permit that can be used to determine compliance, that identifies an affected source has failed to meet an applicable emission limit or standard or that a work practice was not complied with or completed.</p> <p>(2) If no deviation event occurred during the reporting period, a statement that indicates there were no deviations from the permit requirements shall be included in the report.</p> <p>(b) Provided a continuous monitoring system is not being utilized, a Periodic Monitoring Report meeting the requirements specified in provisos 2(b)(1) through (3) of this section of this subpart shall be submitted to the Department.</p> <p>(1) A deviation shall consist of any period of time during which the following occurs:</p>	<p>Rule 335-3-16-.05I(3)(i)</p>

## Provisos for the Facility Flares

Federally Enforceable Provisos	Regulations
<p>(i) A visual observation indicated there was no flame present at the flare tip when a process gas stream could have been sent to it.</p> <p>(ii) The duration of the venting to the atmosphere of a process gas stream lasted more than 15 minutes.</p> <p>(iii) The feed rate of hydrogen sulfide to the flare exceeded the quantity specified in proviso 2 of the <i>emission standards</i> section of this subpart.</p> <p>(iv) The air quality modeling study indicated offsite hydrogen sulfide concentrations average over a 30 minute period exceeded 20 ppmv.</p> <p><del>(v) The opacity exceeded 20% for more than one 6 minute averaging period during any consecutive 60 minute period. Visible emissions, greater than 0% opacity, are observed for more than five minutes.</del></p> <p><del>(vi) The opacity exceeded 40% during any 6 minute averaging period.</del></p> <p>(vii) There was a failure to maintain the accumulated minutes in which visible emissions were observed at a value less than 12 minutes when using Method 22.</p> <p>(viii) Immediate corrective measures were not undertaken when visible emissions were observed.</p> <p>(ix) The requirements specified in provisos 1 and 2 of the <i>compliance and performance test methods and procedures</i> section of this subpart were not complied with.</p> <p>(x) The requirements specified in provisos 1 and 2 of the <i>emission monitoring</i> section of this subpart were not complied with.</p>	

## Provisos for the Facility Flares

Federally Enforceable Provisos	Regulations
<p>(xi) The requirements specified in proviso 1 of the <i>recordkeeping and reporting requirements</i> section of this subpart were not complied with.</p> <p>(2) Except as provided for in proviso 2I of this section, the report shall meet the requirements specified in proviso 2(b)(2)(i).</p> <p>(i) For each deviation event, the following information shall be submitted.</p> <p>(I) Emission source description</p> <p>(II) Permit requirement</p> <p>(III) Date</p> <p>(IV) Starting time</p> <p>(V) Duration</p> <p>(VI) Actual quantity</p> <p>(VII) Cause</p> <p>(VIII) Action taken to return to compliance</p> <p>(IX) Total operating hours of the affected source during the reporting period</p> <p>(X) Total hours of deviation events during the reporting period</p> <p>(XI) Total hours of deviation events that occurred during start ups, shut downs, and malfunctions during the reporting period</p> <p>(3) Each report shall cover a calendar semi-annual period and shall be submitted within thirty days of the end reporting period.</p> <p>(c) The report content and format in proviso 2(b) of this section may be modified upon receipt of Departmental approval.</p>	

## Provisos for the Facility Flares

Federally Enforceable Provisos	Regulations
<p>3. Each deviation from the requirements specified in provisos 1 through 3 of the <i>emission standards</i> section of this subpart, including those that occur during start ups, shut downs, and malfunctions, shall be reported to the Department in a manner that complies with proviso 15(b) and 21(b) of the general proviso subpart of this permit.</p>	<p>Rule 335-3-16-.05I(3)(ii)</p>

## **Appendix B: Facility Engines Monitoring**

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## Each Facility Engine

Monitoring approach:		Periodic monitoring					
<b>I. Indicator</b>		<b>Calculated NO<sub>x</sub>, CO, &amp; VOC emissions</b>					
A. Measurement approach		<p>Fuel gas volume to each unit shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculation.</p> <p>BTU content of fuel gas stream shall be determined semi-annually, or at a frequency determined by the Department.</p> <p>NO<sub>x</sub>, CO, &amp; VOC emission factors shall be determined during performance tests.</p>					
<b>II. Indicator range</b>		<b>Pollutant Emissions shall be maintained at &lt; = to the limits listed in the following table:</b>					
		<b>Emission Point</b>	<b>Unit Rating (BHP)</b>	<b>Catalytic Converter?</b>	<b>NO<sub>x</sub> (lb/hr)</b>	<b>CO (lb/hr)</b>	<b>VOC (lb/hr)</b>
		2700CB	2700	No	17.8	9.5	8.9
		2600IR-A & 2600IR-B	2600	Yes	12.6	12.6	6.8
		1665C	1665	No	9.1	22.8	9.1
		1642W	1642	Yes	9.1	22.8	NONE
		1626IR-A & 1626IR-B	1626	Yes	28.1	15.5	2.9 6.0
		377C	377	Yes	1.5	2.6	1.0
		600W	600	Yes	NONE	NONE	NONE
		660CB-A & 660CB-B	660	No	NONE	NONE	NONE
		<p>A deviation is defined as anytime the calculated emission rate exceeds the respective allowed emission rates.</p> <p>A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.</p>					
A QIP threshold		Not applicable					
<b>III. Performance criteria</b>							
A. Data representiveness		<p>Fuel gas volume monitor shall be located immediately upstream of the engine.</p> <p>Fuel gas BTU content shall be determined from samples that are representative of the fuel gas being consumed.</p> <p>Performance tests shall be undertaken while engine is being operated at normal loads.</p>					
B. Verification of operational status		Not applicable					

C. QA/QC practices & criteria	<p>The fuel gas volume monitor shall be calibrated at a frequency in accordance with the manufacturer's specifications, other written procedures that provide adequate assurance that the device is calibrated accurately, or at least annually, whichever is more frequent.</p> <p>If the fuel gas monitor fails its calibration tests, the fuel gas monitor shall be taken out of service until repairs and/or replacements are made and a new calibration test is undertaken and passed.</p>
D. Monitoring frequency	<p>Fuel gas volume measured continuously.</p> <p>Fuel gas BTU content shall be determined semi-annually, or at a frequency set by the Department.</p> <p>Performance tests shall be undertaken for each unit except the (2) 660 BHP, (1) 600 BHP, and (1) 377 BHP units once every five years utilizing reference methods.</p> <p>Periodic monitoring tests shall be undertaken annually for each unit except the (2) 660 BHP, (1) 600 BHP, and (1) 377 BHP units during those years for which there is no performance test required. This periodic monitoring test may utilize either reference methods OR CTM-034 &amp; Methods 18 &amp; 19 as outlined in 40 CFR 60.</p>
Data collection procedure	<p>Calculate: Monthly, or as set by the Department</p> <p style="padding-left: 40px;">Pollutant emissions while utilizing the fuel volume, BTU content, emission factors and operating hours</p> <p style="padding-left: 40px;">Fuel gas volume consumed</p> <p>Record: Monthly, or as set by the Department</p> <p style="padding-left: 40px;">Fuel gas volume consumed</p> <p style="padding-left: 40px;">Hours of operation.</p> <p style="padding-left: 40px;">Pollutant emissions</p> <p>Record: Each occurrence</p> <p style="padding-left: 40px;">Fuel gas BTU content determination</p> <p style="padding-left: 40px;">Time, date and results of each inspection and corrective actions taken</p>
Averaging period	<p>Monthly, or as set by the Department, &amp; Rolling 12-months</p>

## **Appendix E: Facility Flares Monitoring**

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## Each Facility Flare

Monitoring approach:	Periodic Monitoring	Compliance Assurance Monitoring (CAM)
<b>I. Indicator</b>	<b>H<sub>2</sub>S feed rate</b>	<b>Operate flare with a flame or spark present at all times when a process gas stream may be sent to it. [§60.18(c)(2) &amp; §63.11(b)(3)]</b>
A. Measurement approach	<p>Inlet feed volume shall be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculations or estimated utilizing material balances, computer simulations, special testing, etc.</p> <p>Inlet feed analyzed monthly for its H<sub>2</sub>S content.</p> <p>Frequency may be modified upon receipt of Departmental approval.</p>	<p>The flare tip shall be equipped either with a continuous sparking flame igniter that is monitored by an amp meter or an equivalent device or visual observation OR with a continuously burning pilot light that is monitored with either a thermocouple or an equivalent device or by visual observation.</p>
<b>II. Indicator range</b>	<b>H<sub>2</sub>S feed rate &lt;= 500 Lbs/Hr</b>	<b>Presence of a flame or spark at flare tip [</b>
	<p>A deviation is defined as anytime the average H<sub>2</sub>S feed rate is &gt; 500 Lbs/Hr.</p> <p>Two deviations within a semi- annual period triggers an immediate running of an air quality modeling study that utilizes the maximum inlet mass and flow rates that occurred during this period.</p> <p>The maximum feed rate may be modified upon receipt of Departmental approval.</p>	<p>A deviation is defined as when there was no spark or flame present at the flare tip when a process gas stream could be vented to it.</p> <p>A deviation triggers an immediate inspection, corrective action, and reporting within 48 hours or two work days.</p>
A QIP threshold	Not applicable	<p>If more than 6 deviations occur during any semi-annual reporting period, a Quality Improvement Plan shall be developed and implemented.</p>
<b>III. Performance criteria</b>		
A. Data representiveness	<p>Each volume monitor shall be located upstream of the flare and shall consist of a single device that monitors all streams or multiple devices that monitor individual or multiple streams.</p> <p>The sample point for obtaining the H<sub>2</sub>S content shall be located at or upstream of each volume monitor.</p>	<p>Each flame igniter or flame monitor shall be located at the flare tip and focused on the area where gas exits the flare tip.</p> <p>Visual observations shall be made from the location that provides the best view of the flare tip and/or flare pilot lights or flare igniter.</p>

B. Verification of operational status	Not applicable	Not applicable
C. QA/QC practices & criteria	Each volume monitor shall be maintained and calibrated in accordance with the manufacturer's specifications.	Each flame igniter or flame monitor shall be maintained and calibrated in accordance with the manufacturer's specifications, other written procedures that provide adequate assurance that the device is properly maintained and calibrated accurately, or at least annually whichever is more frequent..  Repairs and/or replacements shall be made immediately when non-functioning or damaged parts are found.  Flame igniter arc length shall not exceed 10% of arc interval and shall have an arcing frequency of no greater than once every 3 seconds.
D. Monitoring frequency	Inlet volume shall be measured continuously.  Inlet feed H <sub>2</sub> S content sample obtained and analyzed once each month.	Pilot flame shall be monitored either continuously with a thermocouple or daily with visual inspections if operating staff is on site.  Flame igniter - arcing frequency shall be monitored either continuously with an amp meter or daily with visual inspections if operating staff is on site.
Data collection procedure	Calculate &/or record an inlet volume that is representative of the average daily volume entering the flare.  Record daily hours of operation.  Record each H <sub>2</sub> S concentration analysis.  Calculate & record H <sub>2</sub> S feed.  Record time, date and results of each calibration.  Record time, date and results of each inspection and corrective actions taken.  Submit air quality modeling results to the Department within 60 days of the end of the semi-annual period.	Record time, date and duration of each incident of when no spark or flame was present at the flare tip when a process gas stream could have been sent to it.          Record time, date and results of each visual observation.  Record time, date and results of each calibration.  Record time, date and results of each inspection and corrective actions taken.
Averaging period	Monthly	Instantaneous

## **Appendix G: Facility Flares Opacity Monitoring**

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## Opacity for the Facility Flares

Monitoring approach:	Periodic Monitoring
<b>I. Indicator</b>	<b>Opacity for Facility Flares (FF &amp; BFF) [§60.18(c)(1) &amp; §63.11(b)(4)]</b>
A. Measurement approach	<p>Provided either (or both) facility flare(s) is (are) being operated, a visual emission observation shall be undertaken daily, or at a frequency approved by the Department.</p> <p>Duration of each observation shall be <math>\geq 15</math> minutes <u>AND</u> <math>\leq 120</math> minutes</p> <p>Each observation shall be conducted in accordance to either:</p> <p>Test Method 9 of 40 CFR Part 60  Or  Test Method 22 of 40 CFR Part 60</p>
<b>II. Indicator range</b>	<p><b>Opacity shall be maintained at <math>\leq 0\%</math>, except for periods not to exceed 5 minutes over any consecutive 2-hour period</b></p> <p>An exceedance is defined as anytime the observed opacity exceeds 0% for more than 5 minutes over a consecutive 2-hour period when utilizing <del>either Method 9 or</del> Method 22</p> <p>A deviation or exceedance triggers continued visible emissions observations at a frequency suitable to defining the emission deviation or exceedance event.. One observation shall be undertaken to establish the end of the visible emission deviation event.</p> <p>A deviation or exceedance triggers an inspection, corrective action, and immediate reporting within 48 hours or two work days.</p>
<b>III. Performance criteria</b>	
A. Monitoring frequency	Daily, or as set by the Department
Data collection procedure	<p>Record: Daily, or as set by the Department</p> <p>Each 15 second observation reading</p> <p>Record: Each occurrence</p> <p>Time, date and results of corrective actions taken</p>
Averaging period	Not applicable